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Seed Quality at Harvest

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Seed Quality at Harvest

Abstract

During the past planting season, there were many reports of low soybean seed germination rates, which may have been the result of last year's wide spread of Phomopsis. Severe Phomopsis fungus infection can reduce seed quality. This season, several diseases (Cercospora, downy mildew, and white mold) were prevalent in different parts of Iowa; the causal fungi of these diseases can infect seeds. As harvest begins, it is time to learn about these diseases and check seed quality.

Keywords

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Seed Quality at Harvest

by XB Yang, Department of Plant Pathology

During the past planting season, there were many reports of low soybean seed germination rates, which may have been the result of last year's wide spread of Phomopsis. Severe Phomopsis fungus infection can reduce seed quality. This season, several diseases (Cercospora, downy mildew, and white mold) were prevalent in different parts of Iowa; the causal fungi of these diseases can infect seeds. As harvest begins, it is time to learn about these diseases and check seed quality.

Cercospora leaf spot. This fall Cercospora leaf blight was wide spread in some parts of Iowa, particularly central and northeastern Iowa. Cercospora leaf blight is caused by *Cercospora kukuchii*. In late-July and August, the disease is easy to identify by a mottled purple-to-orange discoloration of the uppermost soybean leaves. The leaves also have a leathery appearance. In September, when soybean plants are approaching maturity, infected leaves turn orange or bronze. This season, delayed planting and warm weather in the fall seemed to favor the development of this disease. In fields with high disease incidence, soybeans are not the color we are familiar with. From a distance, bronzed leaves of these affected plants can be mistaken for sudden death syndrome or pod and stem blight. Close examination shows that only top leaves are affected. Affected plants may show up in only portions of the fields.

If the disease was found in fields before September or the disease is severe in the fall, seed infection is more likely. Infected seeds have a purple discoloration called purple seed stain. The level of seed infection varies with the level of foliar infection. Discoloration may not be present in soybeans where infection developed late in the season. Seed infection by *Cercospora* fungi may cause poor seed vigor and reduced germination. Beans with substantial amounts of discoloration should not be saved for seed because of the seedborne nature of the disease. Infected seeds carry the disease, which can cause foliar infections when planted.

Downy mildew is a late season disease in Iowa. However, this summer the disease appeared as early as late July. The disease is prevalent in cool wet seasons. Infected soybean leaves have regular shape, small lesions defined by a few cells. The lesions are pale or light yellow in color on the upper surface of the leaves. On the underside of the infected leaves, the lesions are grey in color with turf like mycelium which can be seen without a magnifier. The lesions are found in the upper plant because the fungal spores are airborne. Defoliation can occur when the disease level is high. In this situation, downy mildew will infect the seed, creating white mycelium on the seed coat.

White mold occurred again in part of eastern Iowa this season, although its occurrence was less extensive compared with the last few years. This was due in part to the less dense canopy from delayed planting. This fungus also infects soybean seeds. Infected seeds are light, small in size, whitish with a shrunken appearance. The regular gravity-clean process used in seed processing plants separates infected seeds from healthy seed. Therefore, it

should not be a production concern when you purchase seeds from a quality company. However, the fungal sclerotia, which are similar in color and shape of mice droppings, could be mixed with seed from a white-mold-infected field. Soybean saved for seed should be checked for sclerotia if white mold was present in the field.



Soybean field with leaf blight late in fall.

XB Yang is a professor of plant pathology with research and extension responsibilities in crop diseases.

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